SH2001

HIGH-VOLTAGE, HIGH-CURRENT DRIVER

FAIRCHILD HYBRID CIRCUITS

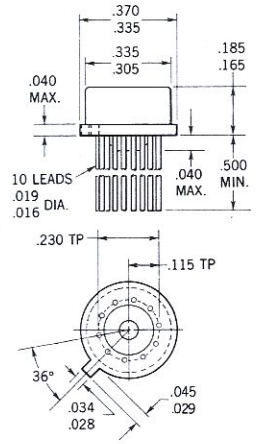
- **INPUTS CCSL COMPATIBLE**
- **USE FOR CORE, CABLE, AND LAMP DRIVER**
- **HIGH CURRENT CAPABILITY . . . 250 mA SINKING CURRENT AT 0.5 VOLT**
- **HIGH VOLTAGE CAPABILITY . . . 40 VOLTS LV_{CEO}**
- **LOGIC FLEXIBILITY . . . . . 4 INPUT NAND WITH INHIBIT (NOR) INPUT**
- **HIGH SPEED . . . . . t_{ON} = 70 ns (TYP) - - t_{OFF} = 110 ns (TYP)**

ABSOLUTE MAXIMUM RATINGS (25°C Free Air Temperature unless otherwise noted)

Voltage Applied to Pin 8	+40 Volts
Voltage Applied to Pin 10	8 Volts
Operating Power	800 mW
Operating Temperature	(See Part Nos.)
Storage Temperature	−65°C to +150°C
Input Reverse Current	1 mA
Current on Pin 8	1 Amp

PHYSICAL DIMENSIONS

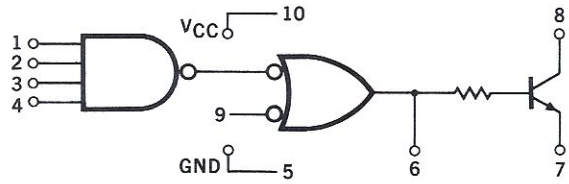
TO-100
(10 pin package)

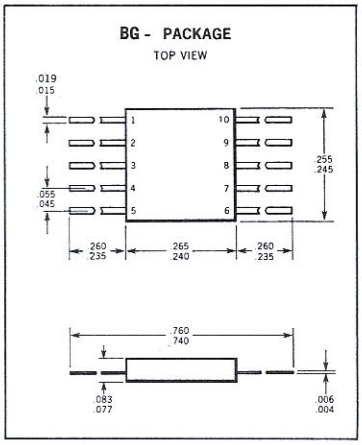


NOTES: All dimensions in inches
Leads are gold-plated kovar
Package weight is 1.32 grams

PART NO. —55°C TO +125°C HAG-20011XX
0°C TO + 70°C HAG 20019XX

LOGIC SYMBOLS AND FUNCTIONS





PART NO. —55°C TO +125°C HBG-20011XX
0°C TO + 70°C HBG 20019XX

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FAIRCHILD SEMICONDUCTOR
A DIVISION OF FAIRCHILD CAMERA AND INSTRUMENT CORPORATION

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GUARANTEED TEST SEQUENCE SH-2001

*TEST NO.	LTPD GROUP	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	SENSE	LIMIT MIN.	LIMIT MAX.
1	A	V_{IH}	V_{IH}	V_{IH}	V_{IH}	GND		GND	I_{OL1}		V_{CCL}	V_8		V_{OL}
2	A	V_{IL}				GND		GND	I_{OL1}	V_{IL}	V_{CCL}	V_8		V_{OL}
3	A	V_{IL}				GND	I_{OL2}				V_{CCL}	V_6		V_{OL2}
4	A		V_{IL}			GND	I_{OL2}				V_{CCL}	V_6		V_{OL2}
5	A			V_{IL}		GND	I_{OL2}				V_{CCL}	V_6		V_{OL2}
6	A				V_{IL}	GND	I_{OL2}				V_{CCL}	V_6		V_{OL2}
7	A				GND	GND	I_{OL2}			V_{IH}	V_{CCL}	V_6		V_{OL2}
8	B	V_R	GND	GND	GND	GND					V_{CCH}	I_1		I_R
9	B	GND	V_R	GND	GND	GND					V_{CCH}	I_2		I_R
10	B	GND	GND	V_R	GND	GND					V_{CCH}	I_3		I_R
11	B	GND	GND	GND	V_R	GND					V_{CCH}	I_4		I_R
12	B					GND				V_R	V_{CCH}	I_9		I_R
13	C	V_F	V_R	V_R	V_R	GND					V_{CCH}	I_1		$-I_F$
14	C	V_R	V_F	V_R	V_R	GND					V_{CCH}	I_2		$-I_F$
15	C	V_R	V_R	V_F	V_R	GND					V_{CCH}	I_3		$-I_F$
16	C	V_R	V_R	V_R	V_F	GND					V_{CCH}	I_4		$-I_F$
17	C				GND	GND				V_F	V_{CCH}	I_9		$-I_F$
18	D					GND		GND			V_{CCL}	V_6	V_{OH}	
19	E	GND				GND		GND	V_{OX}		V_{CCL}	I_8		I_{OX}
20	F					GND		GND			V_{PD}	I_{10}		I_{PDH}
21	F	GND				GND					V_{MAX}	I_{10}		I_{MAX}
22*	F					GND					V_{PD}			t_{ON}
23*	F					GND					V_{PD}			t_{OFF}

*See Test Conditions and Definitions on Page 3

FORCING FUNCTIONS (Temperature Range −55°C to +125°C)

	UNITS	−55°C	+25°C	+125°C
V_{CCL}	Volts	4.50	4.50	4.50
V_{CCH}	Volts	5.50	5.50	5.50
V_{PD}	Volts		5.00	
V_{MAX}	Volts		8.00	
V_{IL}	Volts	1.40	1.10	0.80
V_{IH}	Volts	2.10	1.90	1.70
V_R	Volts	4.00	4.00	4.00
V_F	Volts	0.00	0.00	0.00
I_{OL1}	Milliamps	250	250	250
I_{OL2}	Milliamps	8.00	8.00	7.50
V_{OX}	Volts	40.0	40.0	40.0

FORCING FUNCTIONS (Temperature Range 0°C to +70°C)

	UNITS	0°C	+25°C	+70°C
V_{CCL}	Volts	5.00	5.00	5.00
V_{CCH}	Volts	5.00	5.00	5.00
V_{PD}	Volts		5.00	
V_{MAX}	Volts		8.00	
V_{IL}	Volts	1.20	1.10	.950
V_{IH}	Volts	2.00	1.90	1.80
V_R	Volts	4.00	4.00	4.00
V_F	Volts	0.45	0.45	0.50
I_{OL1}	Milliamps	250	250	250
I_{OL2}	Milliamps	8.0	8.0	7.5
V_{OX}	Volts	40.0	40.0	40.0

TEST LIMITS (Temperature Range −55°C to +125°C)

	UNITS	−55°C MIN.	−55°C MAX.	+25°C MIN.	+25°C MAX.	+125°C MIN.	+125°C MAX.
V_{OL1}	Volts		0.45		0.40		0.45
V_{OL2}	Volts		0.45		0.40		0.45
V_{OH}	Volts	2.20		2.00		1.80	
I_R	Microamp				2.0		5.0
$-I_F$	Milliamp		1.60		1.60		1.50
I_{OX}	Microamp				5.0		200
I_{PDH}	Milliamp				30.6		
I_{MAX}	Milliamp				29.6		
t_{ON}	Nanosec.				160		
t_{OFF}	Nanosec.				220		

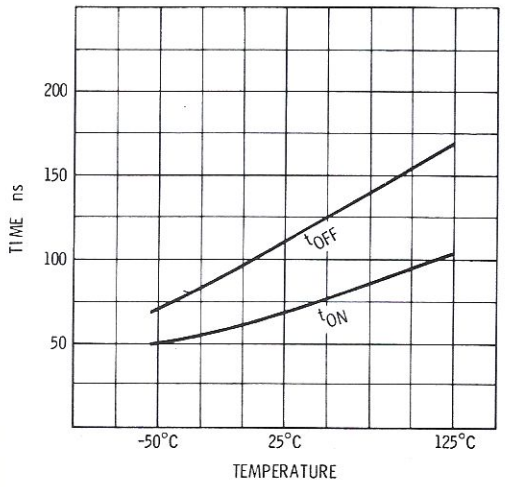
TEST LIMITS (Temperature Range 0°C to +70°C)

	UNITS	0°C MIN.	0°C MAX.	+25°C MIN.	+25°C MAX.	+70°C MIN.	+70°C MAX.
V_{OL1}	Volts		0.45		0.45		0.5
V_{OL2}	Volts		0.45		0.45		0.5
V_{OH}	Volts	2.05		1.95		1.85	
I_R	Microamp				5.0		10.0
$-I_F$	Milliamp		1.40		1.40		1.35
I_{OX}	Microamp				5.0		200
I_{PDH}	Milliamp				30.6		
I_{MAX}	Milliamp				34.0		
t_{ON}	Nanosec.				200		
t_{OFF}	Nanosec.				260		

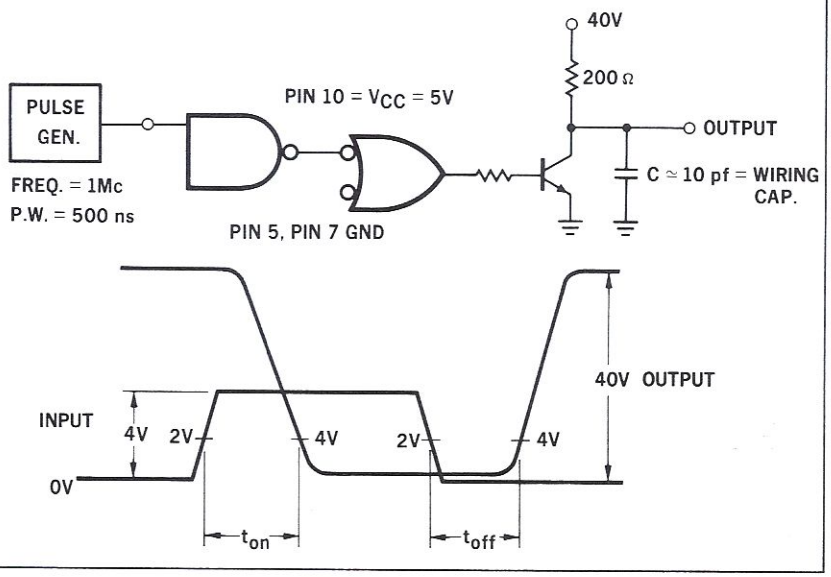
TABLE OF LTPD'S (These apply to test sequence page 2)

GROUP	COLD	25°C	HOT
A	15%	10%	15%
B		10%	15%
C	15%	10%	15%
D	15%	10%	15%
E		10%	15%
F		10%	15%

TYPICAL SWITCHING TIMES

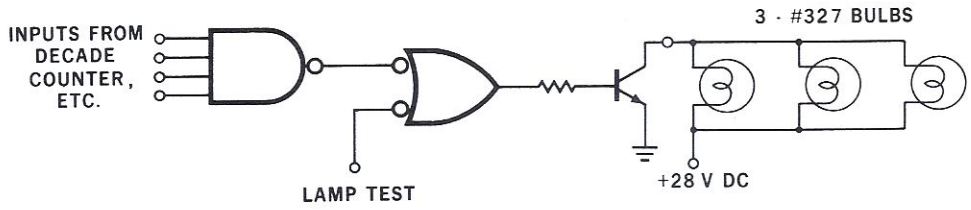


SWITCHING TIME TEST CONDITIONS

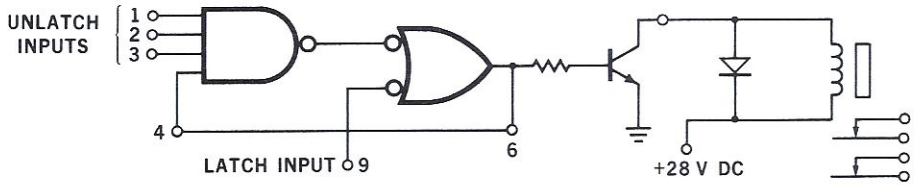


APPLICATIONS

LAMP DRIVER—

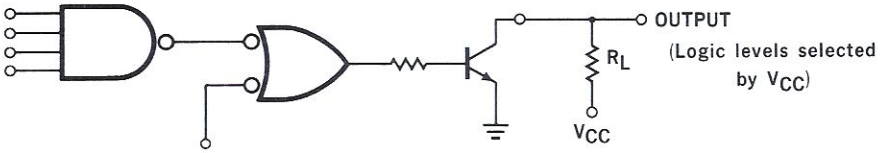


LATCHING RELAY—



Relay will unlatch if any input (1, 2, 3) goes low.

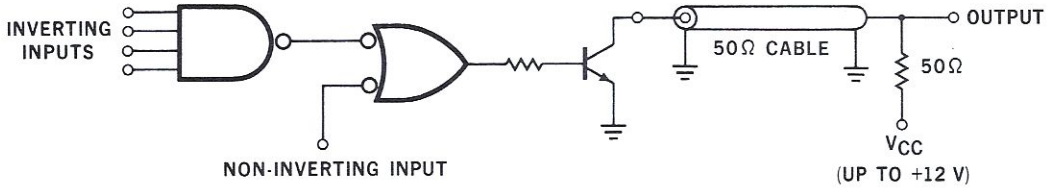
DTμL INTERFACE DRIVER—



$R_L \geq 160\Omega$ at V_{CC} = 40 VOLTS

$R_L \geq 80\Omega$ at V_{CC} = 20 VOLTS

HIGH-CURRENT LINE TRANSMITTER—



NOTE: If only non-inverting input is used, one of the inverting inputs must be grounded.

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